List 8

Task 1

According to the dimensions shown in the drawing below, prepare a model of a spherical pressure vessel with an inlet nozzle at the lower part. Define the computational model according to the provided loads and supports, assuming the structure is made of structural steel (Young's modulus E = 200 GPa; Poisson's ratio v = 0,3), and the internal pressure acting on the entire internal surface is: $p_1 = 1$ MPa. For the analyzed structure, determine the total displacements and the reduced stresses according to the Huber-von Mises hypothesis.



Task 2

According to the dimensions shown in the drawing below, prepare a shell model for: a) a thin plate/disk, b) a part of a thick-walled element. Define the computational model according to the provided loads and supports, assuming the structure is made of structural steel (Young's modulus E = 200 GPa; Poisson's ratio v = 0,3), and the applied force is: $F_1 = 1$ kN. What is the difference between the stress and strain states in case a) and b)?

